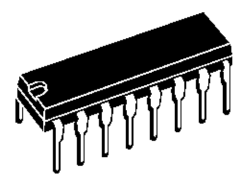
SGS-THOMSON MICROELECTRONICS

TDA2824

DUAL POWER AMPLIFIER

- SUPPLY VOLTAGE DOWN TO 3 V
- HIGH SVR
- LOW CROSSOVER DISTORTION
- LOW QUIESCENT CURRENT
- BRIDGE OR STEREO CONFIGURATION



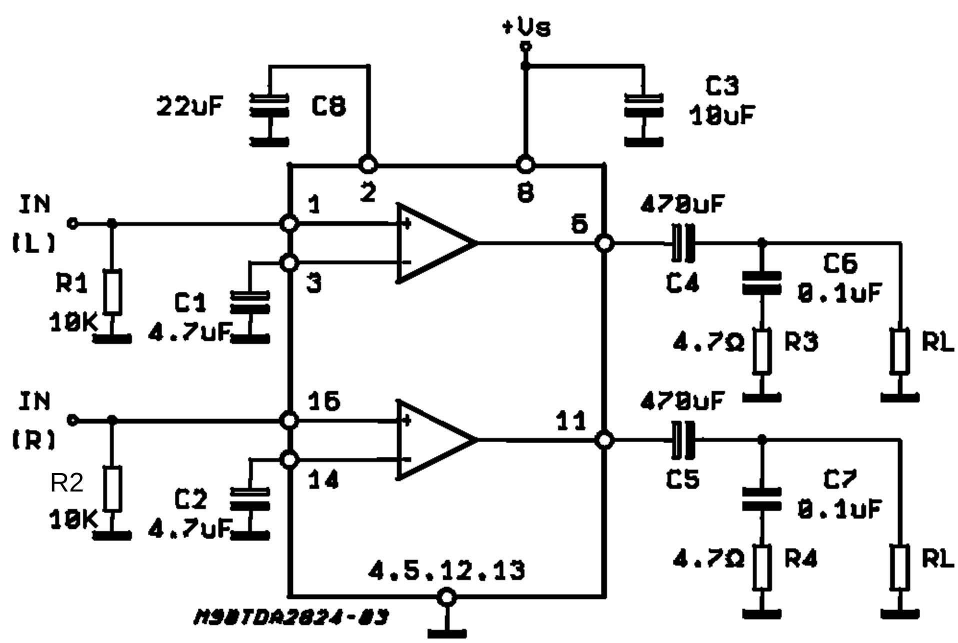
Powerdip (12+2+2)

ORDERING NUMBER : TDA2824

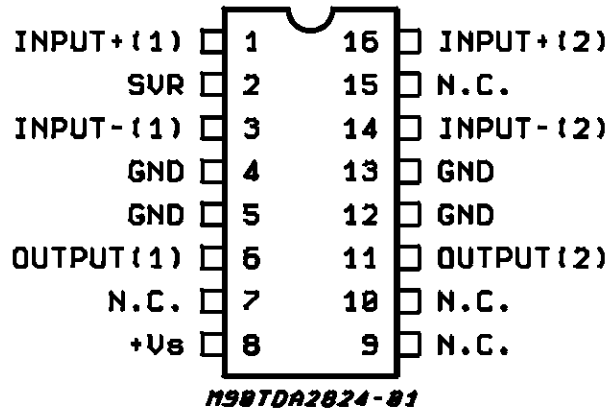
DESCRIPTION

The TDA2824 is a monolithic integrated circuit in 12+2+2 powerdip, intended for use as dual audio power amplifier in portable radios and TV sets.

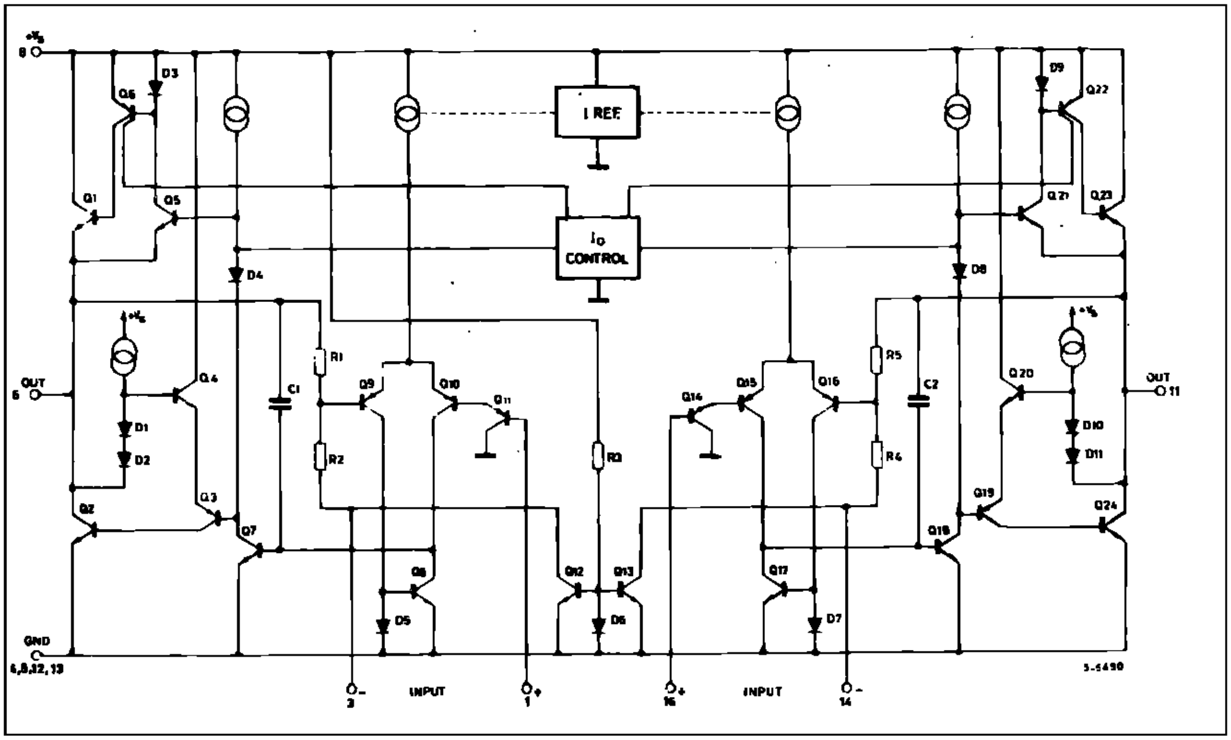
TYPICAL APPLICATION CIRCUIT (Stereo)



PIN CONNECTION



SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	16	V
I_O	Output Peak Current	1.5	A
P_{tot}	Total Power Dissipation at T_{amb} = 50°C T_{amb} = 70°C	1.25 4	W W
T_{stg}, T_j	Storage and Junction Temperature	-40 to 150	°C

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max.	80	°C/W
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max.	20	°C/W

ELECTRICAL CHARACTERISTICS (V_S = 6V, T_{amb} = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
STEREO (test circuit of fig. 1)							
V_S	Supply Voltage			3		15	V
V_O	Quiescent Output Voltage	V_S = 9V V_S = 9V			4 2.7		V V
I_d	Quiescent Drain Current				6	12	mA
I_b	Input Bias Current				100		nA
P_O	Output Power (each channel)	d = 10% f = 1KHz V_S = 9V R_L = 4Ω V_S = 6V R_L = 4Ω V_S = 4.5V R_L = 4Ω		 1.3 0.45 	 1.7 0.65 0.32		 W W W
d	Distortion	V_S = 9V, f = 1KHz R_L = 8Ω, P_O = 0.5W			0.2		%
G_V	Closed Loop Voltage Gain	f = 1KHz		36	39	41	dB
R_i	Input Resistance	f = 1KHz		100			KΩ
e_N	Total Input Noise	R_S = 10KΩ	B = 22Hz to 22KHz		2.5		µV
			Curve A		2		µV
SVR	Supply Voltage Rejection	f = 100Hz		40	50		dB
CS	Channel Separation	R_S = 10KΩ f = 1KHz			50		dB
BRIDGE (test circuit of fig. 2)							
V_S	Supply Voltage			3		15	V
V_{OS}	Output Offset Voltage	R_L = 8Ω				60	mV
I_b	Imput Bias Current				100		nA
P_O	Output Power	d = 10% f = 1KHz V_S = 9V R_L = 8Ω V_S = 6V R_L = 8Ω V_S = 4.5V R_L = 4Ω		 2.5 0.9 	 3.2 1.35 1		 W W W
d	Distortion (f = 1KHz)	R_L = 8Ω P_O = 0.5W			0.2		%
G_V	Closed Loop Voltage Gain	f = 1KHz			39		dB
e_N	Total Input Noise	R_S = 10KΩ	B = 22Hz to 22KHz		3		mV
			Curve A		2.5		µV
SVR	Supply Voltage Rejection	f = 100Hz		48	60		dB

Figure 1 : Test Circuit (stereo).

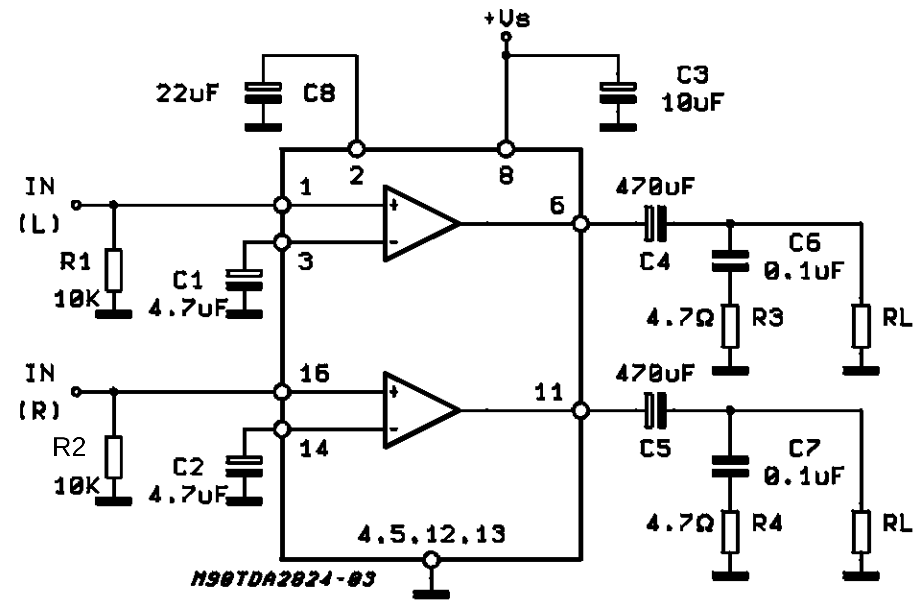
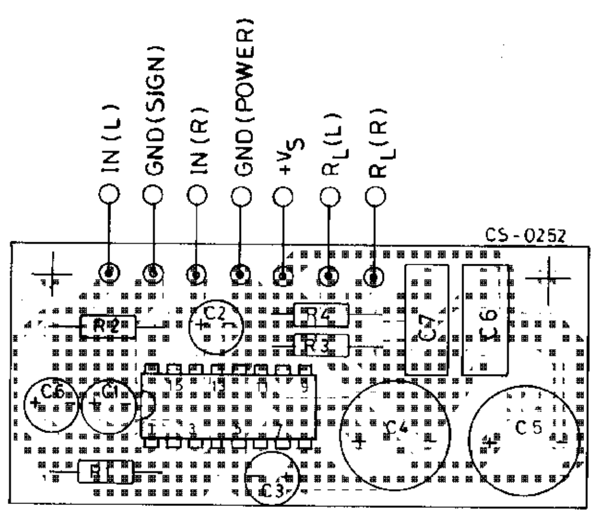


Figure 2: P.C. Board and Component Layout of the Circuit of Figure 1. (1:1 scale)



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Figure 3 : Test Circuit (bridge).

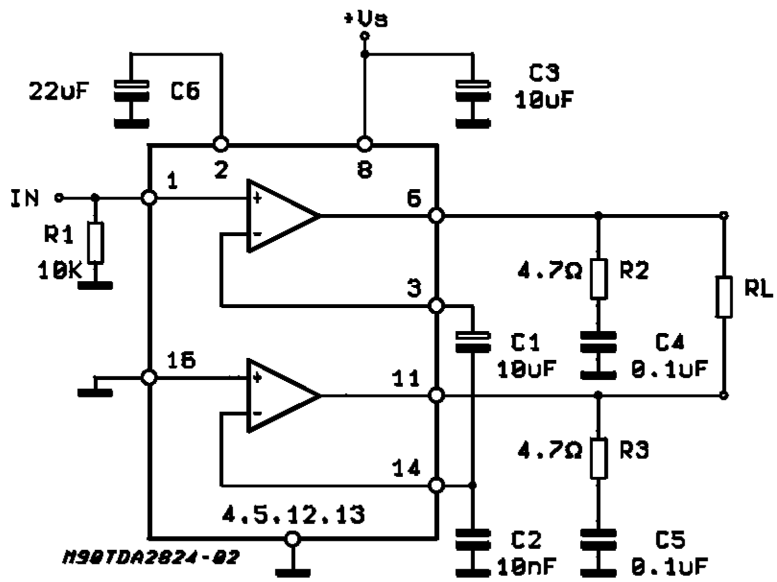


Figure 4: P.C. Board and Component Layout of the Circuit of Figure 3. (1:1 scale)

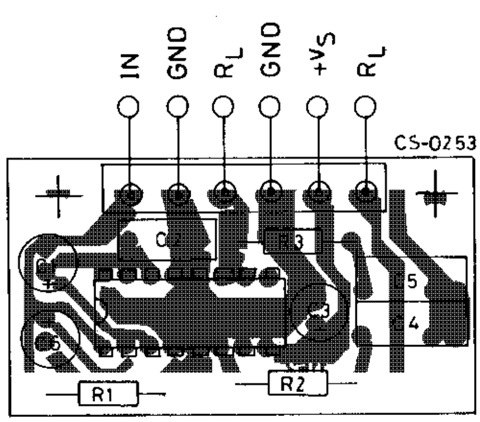


Figure 3 : Output Power vs. Supply Voltage (Stereo).

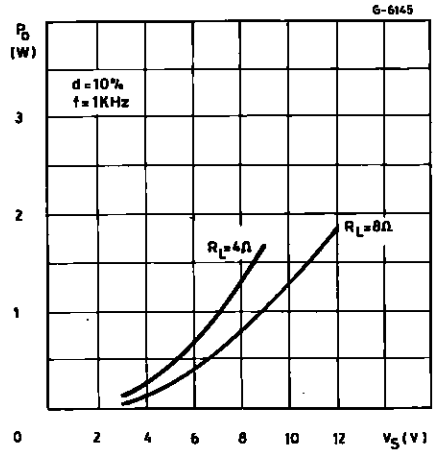


Figure 4 : Output Power vs. Supply Voltage (Bridge).

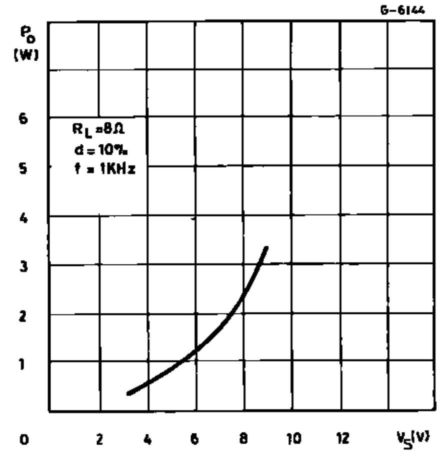


Figure 5 : Distortion vs. Output Power (Bridge).

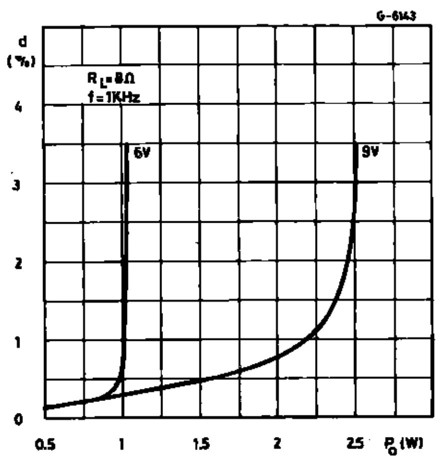


Figure 6 : Distortion vs. Output Power (Bridge).

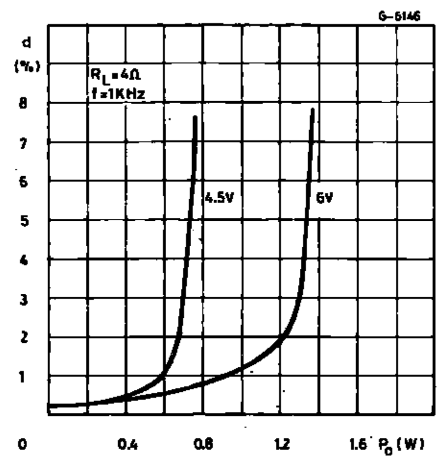


Figure 7 : Supply Voltage Rejection vs. Frequency (Stereo)

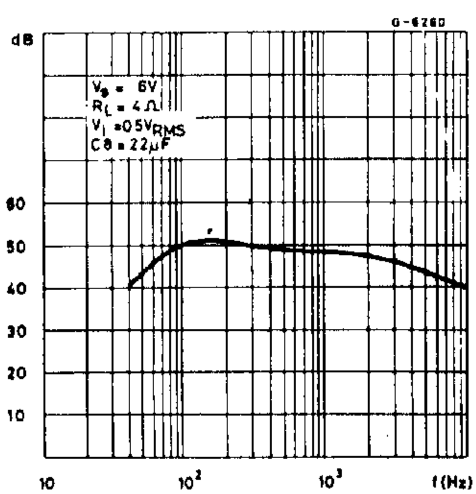


Figure 8 : Quiescent Current vs. Supply Voltage.

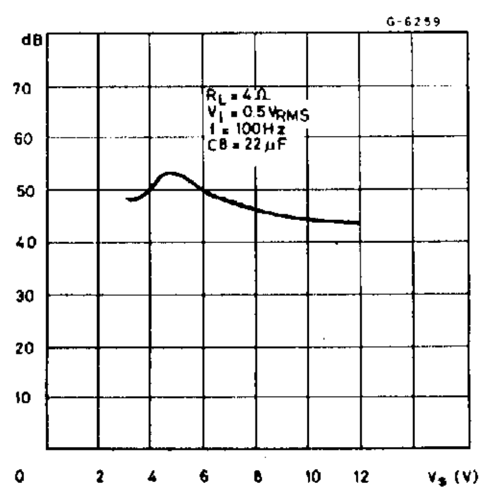


Figure 9 : Quiescent Current vs. Supply Voltage.

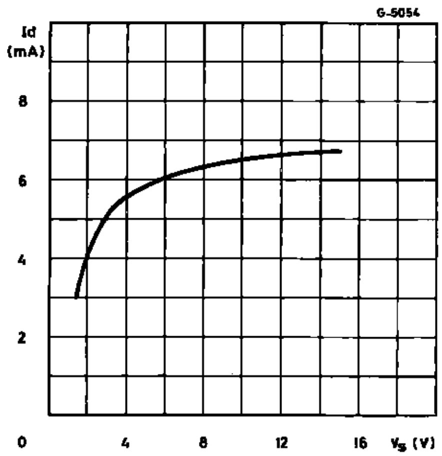


Figure 10 : Total Power Dissipation vs. Output Power (Stereo).

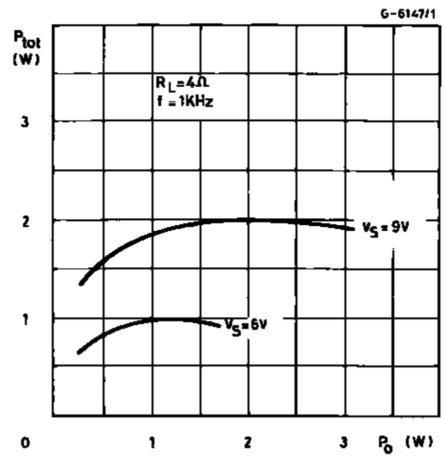


Figure 11 : Total Power Dissipation vs. Output Power (Bridge).

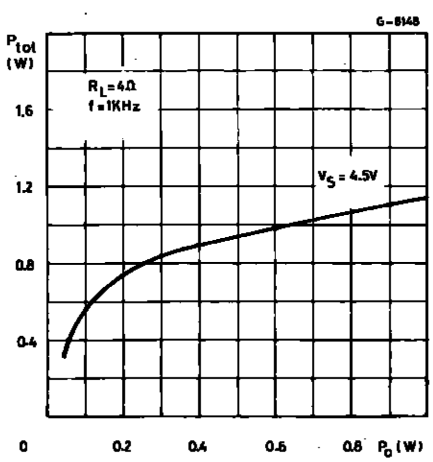
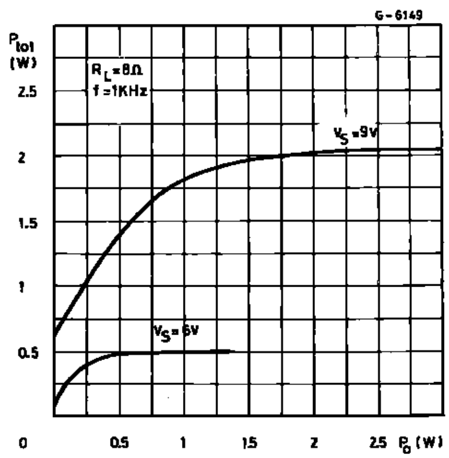


Figure 12 : Total Power Dissipation vs. Output Power (Bridge).



MOUNTING INSTRUCTION

The $R_{th\ j\text{-}amb}$ of the TDA2824 can be reduced by soldering the GND pins to a suitable copper area of the printed circuit board (Figure 13) or to an external heatsink (Figure 14).

The diagram of Figure 15 shows the maximum dissipable power P_{tot} and the $R_{th\ j\text{-}amb}$ as a function of the side "∂" of two equal square copper areas having a thickness of 35 μ (1.4 mils).

During soldering the pins temperature must not exceed 260 °C and the soldering time must not be longer than 12 seconds.

The external heatsink or printed circuit copper area must be connected to electrical ground.

Figure 13 : Example of P.C. Board Copper Area which is used as Heatsink.

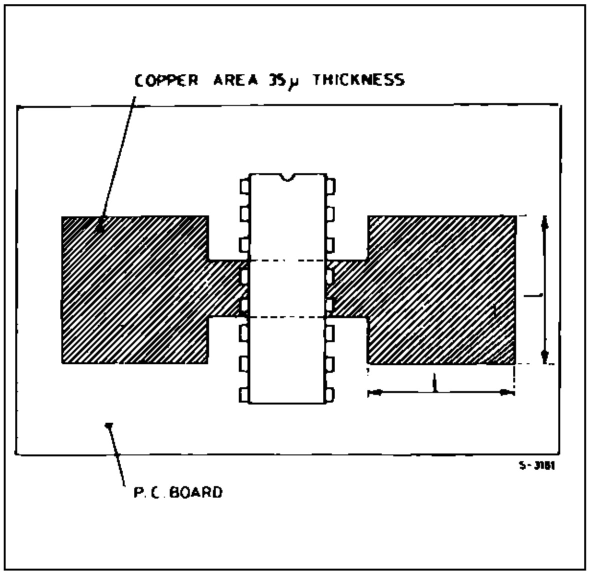


Figure 14 : External Heatsink Mounting Example.

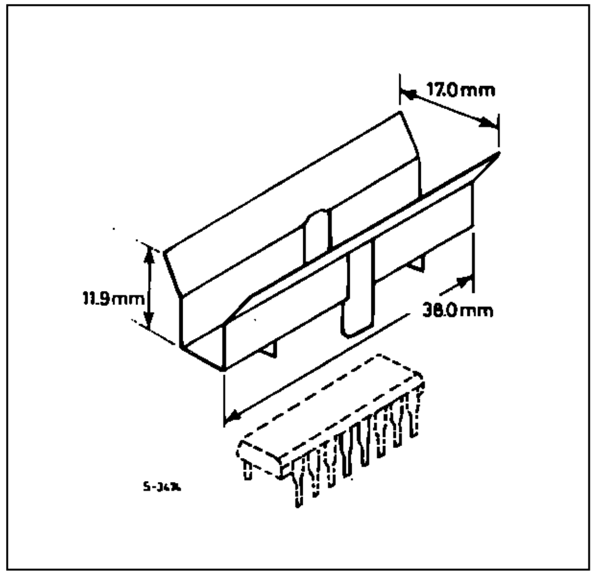


Figure 15 : Maximum Dissipable Power and Junction to Ambient Thermal Resistance vs. Side "∂".

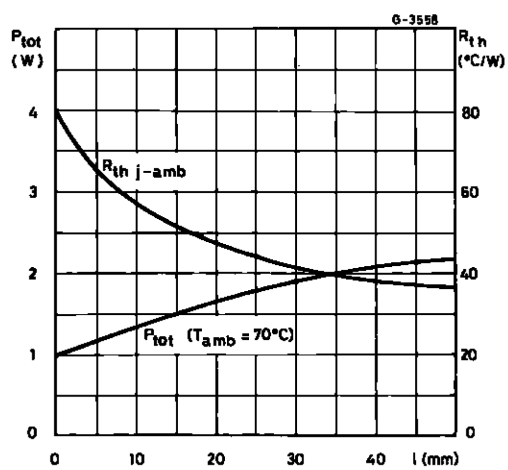
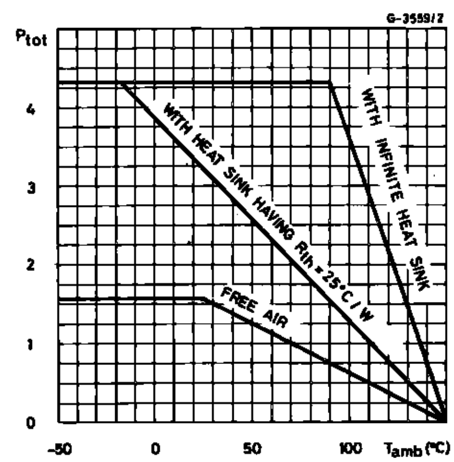
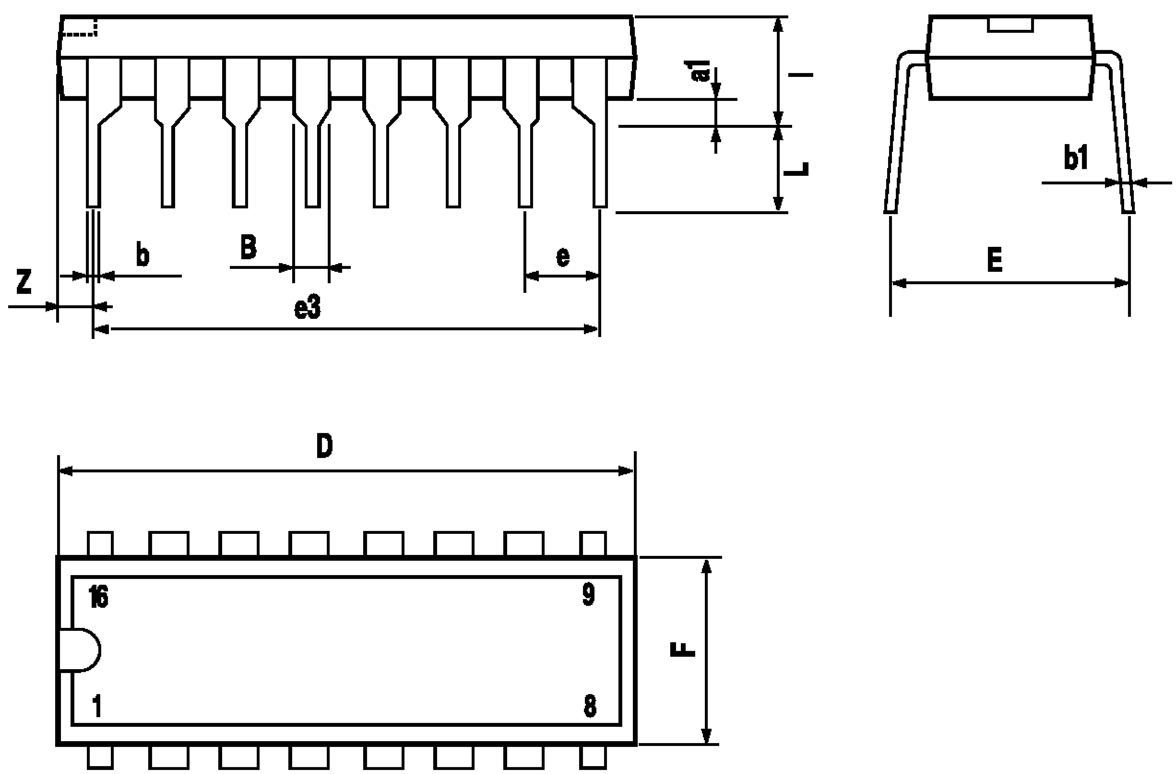


Figure 16 : Maximum Allowable Power Dissipation vs. Ambient Temperature.



POWERDIP 12+2+2 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.85		1.40	0.033		0.055
b		0.50			0.020	
b1	0.38		0.50	0.015		0.020
D			20.0			0.787
E		8.80			0.346	
e		2.54			0.100	
e3		17.78			0.700	
F			7.10			0.280
I			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050



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